

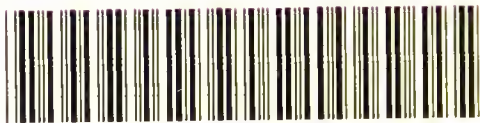
Ophthalmic Hints.



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A. St. Clair Buxton.

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OPHTHALMIC HINTS.



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OPHTHALMIC HINTS.

*Diagnosis and Treatment of Affections
of the Eye commonly met with in
General Practice.*

BY

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CONTENTS.

VISION.

Near Types, Distant Types, Astigmatism Fan	I
---	---

EYELIDS.

Tarsal Cyst ; Marginal Ophthalmia ; In- growing Eyelashes ; Ectropion and Entropion ; Warts ; Styne	6
---	---

LACHRYMAL APPARATUS.

Epiphora ; Stillicidium ; Mucocele ; Lach- rymal Abscess	II
---	----

CONJUNCTIVA.

Catarrhal Ophthalmia ; Purulent Ophthal- mia ; Ophthalmia Neonatorum ; Phlyc- tenules ; Granular Ophthalmia	13
---	----

CORNEA.

Simple or Vascular Keratitis ; Phlyctenu- lar Keratitis ; Interstitial Keratitis ; Ulceration ; Foreign Bodies ; Wounds.	19
--	----

SCLEROTIC.

Sclerotitis ; Episcleritis ; Wounds	28
---	----

IRIS.

Simple Iritis ; Rheumatic Iritis ; Syphilitic Iritis ; Traumatic Iritis ; Serous Iritis	30
---	----

LENS.

Cataract	37
--------------------	----

VITREOUS HUMOUR.

Muscae Volitantes	39
-----------------------------	----

INTRAOCULAR DRAINAGE.

Glaucoma	40
--------------------	----

INJURIES.

Scalds ; Burns ; Escharotics (Lime, Acids)	44
--	----

FORMULÆ.

Drops ; Lotions ; Fomentations ; Ointments	46
--	----

AXIOMS	50
------------------	----

PREFACE.

THE family medical adviser is frequently called upon in the course of his practice to diagnose and treat various disorders of the eye. It can hardly be expected, however, that a busy general practitioner can spare sufficient time to familiarize himself completely with this special branch of surgery. Indeed, the majority of medical men are in the habit of relying to a great extent on the assistance of the oculist when serious cases arise. But it is incumbent on all to be able to readily distinguish between those which are serious and those which are not.

Mild affections, moreover, may speedily assume grave aspects under certain conditions ; and it is therefore of the highest importance that all cases should be correctly diagnosed and treated from the very first.

A man in large practice has but little time for reading, and it is with a view to diminishing his labours in this direction that the following pages have been written. Their object is to afford a ready means of looking-up the salient points in diagnosis of those affections of the eye which present themselves most frequently, and of suggesting a line of treatment suitable to each.

In a volume of such small compass as the present, dogmatism can scarcely be avoided ; but I would impress on the reader that the HINTS are simply intended to act as a general guide.

In the *Lancet*, April 14, 1888, was published a full account of an Ophthalmic Cabinet which was made for me by Messrs. Burroughs and Wellcome, of Holborn Viaduct. This cabinet contains all the essential medications, and is furnished with five drawers for dressings, small instruments, brushes, stock in tabloids for replenishing solutions, etc. It is about as large as a writing desk, and is a useful article in the consulting room.

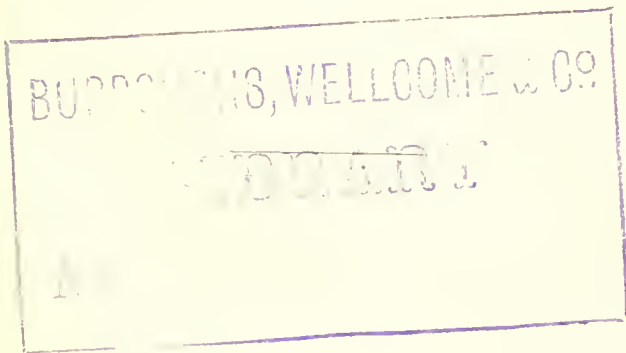
The same firm has also fitted up a very

handy little ophthalmic pocket-case, designed by Mr. Walsh, for the use of general practitioners. It contains a number of tubes, filled with tabloids of the various alkaloids, lapis divinus, nitrate of silver, etc. It also contains a selection of simple ophthalmic apparatus, probes, lens, etc. It is small enough to go into the waistcoat-pocket, and is very inexpensive.

If general practitioners—especially in the country—were more fully equipped with commodities of this kind many an eye might be saved a large amount of unnecessary suffering, so often caused by delay.

A. ST. C. B.

London, 1890.



OPHTHALMIC HINTS.

VISION.

DEFECTIVE vision is due to one of three causes :

(a) An error of refraction or accommodation.

(e.g., *Myopia*, *Hypermetropia*, *Astigmatism*, *Presbyopia*.)

(b) Opacity of the media of the eye.

(e.g., *Cataract*, *Nebulous Cornea*, *Hæmorrhage in Vitreous*, etc.)

(c) Lesion of nervous apparatus.

(e.g., *Disease of Retina*, *Optic Neuritis*, *Atrophy of Optic Disc*, etc.)

To whichever cause imperfect sight may be ascribed, a consultation is advisable as soon as visual deficiency has been detected.

Errors of refraction or accommodation may be *suspected* if any of the following symptoms be observed :

(1) Difficulty in reading, sewing, etc., at sixteen inches.

- (2) Running together of the lines of print.
- (3) Aching of the eyeballs and watering of the eyes after reading.
- (4) Holding the head sideways to look at a small object.
- (5) Squint.
- (6) Frequent frontal headache.
- (7) Screwing up the eyelids while looking at distant objects.

To test the sight it is essential that one eye be examined at a time, the other being kept covered or closed.

The patient should be able to read the paragraph of smallest letters in the NEAR TYPES with each eye at sixteen inches, *without atropine*; and should be able to read the row of smallest letters in the DISTANT TYPES, and see each line of the ASTIGMATISM FAN quite clearly, with each eye, at six yards, *with atropine*.

N.B.—One or two of the “strong atropine drops” (*vide* Formulæ) should be instilled into each eye half an hour before using the DISTANT TYPES, otherwise many errors of refraction will escape detection. The NEAR TYPES are to be used *before* the atropine has been applied.

NEAR TYPES.

FOR THE DETECTION OF PRESBYOPIA.

(a) Hold the paragraphs of small print exactly sixteen inches from the face, and stand in such a position as to get the best possible light on the page.

(b) If you can read the finest print quite easily, and without effort, with each eye, at the distance of sixteen inches, there cannot be much (if any) optical error, provided the eyes stand the test of the Distant Types and Astigmatism Fan.

(c) If you find a difficulty in reading the smallest print, pass on to a paragraph which you can read easily at sixteen inches, and notice whether you can read the same paragraph as comfortably when you move the page rather further from your face.

N.B.—If the difficulty encountered in reading the smallest print be due to presbyopia, the larger paragraphs will probably be better seen at from twenty to twenty-five inches. But if, on the contrary, the print be seen better at sixteen inches than at any greater distance, the impediment to reading the smallest type may lie in some other cause than presbyopia. It will be remembered that presbyopia begins to be manifested about the age of forty; and most persons require glasses when forty-five years old.

*NEAR TYPES.**Type No. I.—Diamond.*

The period during which seeds retain their vitality is very variable. Melon-seeds have been known to vegetate after forty years. Seeds capable of germinating have been stated to have been found in a Roman tomb, fifteen or sixteen centuries old. (M. C. Cooke.)

Type No. II.—Pearl.

The common way in which we reason, is to expect that things will happen as they have happened before in like circumstances. Seeing a bright flash of lightning, I expect thunder to follow, because it has followed bright flashes of lightning in previous cases. (*Prof. Jevons.*)

Type No. IV.—Minion.

The eruption of Roseola is preceded for a day or two by slight febrile disturbance, which subsides as the rash becomes developed, and there is commonly some dryness and redness of the fauces. (*Balmanno Squire.*)

Type No. VI.—Bourgeois.

Squint or Strabismus exists if the visual axes are not both directed to the same object. A squint may be the result either of overaction or of weakness or paralysis of a muscle: the internal rectus by excessive contraction often causes convergent squint; most other forms, as well as some convergent cases, result from actual defect of nervous or muscular power. (*Edward Nettleship.*)

Type No. VIII.—Small Pica.

It would appear then to be a just conclusion from these data, that infectiveness is no longer to be considered as a mark of speci-

ficity, but that it is a property resident in every inflammation and every fever, even in those arising from the commonest, and most unspecific, causes. (*W. J. Collins.*)

Type No. X.—Pica.

Reptilia furnish the most numerous and important examples of venomous animals, and these are limited almost entirely to the order Ophidia or snakes. (*Sir Joseph Fayrer.*)

Type No. XII.—Great Primer.

Many of the patterns of Molar teeth in Rodents are very beautiful, their form being mostly maintained by various dispositions of dentine and enamel. (*F. H. Balkwill.*)

EYELIDS.

Tarsal Cyst.—A small tumour in the substance of the eyelid, more often the upper, and usually resulting from obstruction of a Meibomian duct. The skin is neither discoloured nor inflamed. There is usually no pain. If the lid be everted, a purplish spot will be found on palpebral conjunctiva, corresponding to the situation of the enlargement. Occasionally a tarsal cyst suppurates and bursts (through the inner surface of the lid).

Treatment.—The lid is everted, and a free incision is made through the inner surface of the lid into the tumour. A small curette or director is inserted, and the contents thoroughly scooped out. If recurrence take place the operation must be repeated, and a fine point of lunar caustic, a probe coated with caustic, or a hot wire, may be introduced through the opening. Care must be taken to remove all trace of caustic from the mouth of the wound before allowing the lid to come in contact with the globe, lest injury be done to the cornea. The simplest plan is to pare off

the edges of the opening, after applying the caustic, with a fine pair of curved scissors.

Marginal Ophthalmia (Ciliary Blepharitis. Tinea Tarsi).—Inflammation of the margins of the lids, frequently a sequela of measles. Sometimes induced by uncleanly habits; unhealthy surroundings, such as living over stabling; errors of refraction, etc. Occurs mostly in weak, anæmic, or tuberculous children. The edges of the lids are red and thickened, exuding a thick, sticky, though generally scanty, discharge, which glues them together and mats the lashes. The exudation, in drying, leaves scabby scales (deposited about the roots of the hairs), which, on being removed, reveal small raw patches. There is a variable amount of pain, and a good deal of irritability of the affected part.

More or less general conjunctivitis may accompany the disease.

In cases of long standing, the lashes drop out and produce the bald condition of eyelid known as *lippitudo*.

Treatment.—Thoroughly remove all scabs and scales by bathing the margins of the lids three or four times a day with bicarbonate of sodium lotion (warmed), and after each bath-

ing apply weak yellow ointment to the edges of the lids. Tonics and change of air are valuable. Spectacles when required.

In-growing Eyelashes (Trichiasis).—In this condition, which may or may not be accompanied by entropion, there is a misdirection of the lashes, so that they grow or turn inwards instead of curving gently away from the globe. Their position causes irritation of the cornea and conjunctiva by direct mechanical means—friction. The free edge of the lid is sometimes thickened. There may be only a single lash misdirected, or the whole line may be misplaced. The discomfort is extreme, as vascular keratitis is the natural result of the irritation.

Treatment.—When all the lashes are displaced, an operation, to cause the edge of the lid to become more everted, will probably be required. When only one or a few hairs are at fault, the frequent and systematic pulling out (epilation) of these hairs may suffice. A pair of small tweezers will be found convenient for removal of the offenders, and they should be used at least once a week. If the hairs are not exterminated by this repeated process, it may be found advisable to

perform a little operation to change the direction of each lash. This is easily done with a needle threaded with a human hair of sufficient length, *both ends* of which are passed *together* through the eye of the needle. The point of the needle is made to enter at the spot from which the lash is growing and brought out at another spot a little further away from the globe. The misdirected lash is then entangled in the loop of hair and dragged through the edge of the lid into its new position. Cocaine drops may be used in all cases to soothe the eye.

A magnifying-glass should invariably be employed when epilation is undertaken, for the young lashes are so fine as to often escape detection without it. But as the finest hairs cause an immense amount of tickling, it is as important to remove them as those of maturer growth.

Ectropion and **Entropion**. — “Turning out” and “turning in” of the margins of the lids can only be cured by operation.

Warts.—Warts growing on the skin of the lids should be removed with a pair of curved scissors. Hæmorrhage can easily be

stopped by the application of a crystal of ferric chloride or a hot wire.

Stye (*Hordeolum*).—A small boil on the margin of the lid, usually resulting from inflammation of a sebaceous follicle. It is extremely painful. Styes frequently appear in successive crops, and are said to be indicative of a low state of health. They are sometimes associated with errors of refraction.

Treatment.—Constant hot water fomentation or hot bread-and-water poultice. As soon as the stye “points” it should be laid open, and the pus evacuated. The ammoniated tincture of quinine is considered a suitable internal remedy. The sight should be tested.

Granular Lids (*Trachoma*).—*Vide* GRANULAR OPHTHALMIA.

LACHRYMAL APPARATUS.

Watering of the Eye (Epiphora, Stillidium).—An overflow of tears is caused either by oversecretion of the lachrymal gland (epiphora) on the one hand, or by one of the following conditions (stillidium) on the other : displacement of the punctum (orifice of canaliculus) from its normal position in contact with the ocular conjunctiva, as in ectropion ; by a stricture of the tear-passage in some portion of its course ; by a block in the tear-passage, as from mucocele, lachrymal abscess, chalky concretions, etc. ; by occlusion of the passage by pressure, as from growths, or syphilitic deposits ; by congenital absence of a canaliculus or punctum ; by diseased bone ; or by inflammatory swelling of the lining membrane of the canaliculus, lachrymal sac, or nasal duct. This last is the only one amenable to treatment by medicinal applications alone.

Treatment.—Chloride of zinc drops—first weak, then strong—may be tried three times a day for a week. If no improvement take

place, operative measures will be required to effect a cure. In syphilitic subjects mercury should be given internally ; but the chances are that organic adhesions of the walls of the canal have taken place, and probes will be required in addition to medicinal treatment. In the majority of cases it is better to slit up the lower canaliculus before using the probes.



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CONJUNCTIVA.

Catarrhal Ophthalmia (Simple Conjunctivitis).—The colour of the eye is dusky or brick red. The injected blood-vessels are tortuous. There is an *absence* of fine, pink, straight blood-vessels radiating towards the cornea (near its margin) under the conjunctiva. The discharge is watery or mucous in character. No pus. The lids are somewhat swollen, and sore. A sensation of dust or fine grit in the eye is experienced. There is no photophobia. These symptoms are generally caused by cold, such as a draught or east wind ; but they may be due to the presence of a foreign body, such as dust, lodged under an eyelid. In this case the onset is usually very sudden.

Treatment.—Carefully examine inner surfaces of both upper and lower lid, and conjunctival sac. Remove any particles of dust or grit with a blunt probe. Boracic acid lotion every three or four hours. Weak yellow ointment, or boracic acid ointment, inside margin of lower lid, at night. If discharge

be copious, weak chloride of zinc drops may be instilled after each application of the lotion. If soreness be very troublesome, cocaine drops may be used at frequent intervals during the day.

Purulent Ophthalmia (Gonorrhœal Ophthalmia).—The colour of the eye is brick red, but more intense than in catarrhal ophthalmia. Vessels are often so distended, and conjunctiva so swollen, as to present the appearance of "raw flesh" round the cornea, the margin of which may even be overlapped by the swollen tissue. Discharge is profuse, and consists of pus. Lids are œdematous. There is a sensation of sand in the eye. The cornea may be ulcerated (*vide* CORNEA), in which case photophobia will probably be great.

Treatment.—The first thing to be done is to shield the sound eye by covering it with a piece of adhesive plaister (Leslie's is the best), in the centre of which a circular hole has been cut, and in which is fixed a small watch-glass. The plaister is to be trimmed to fit closely to forehead, nose, and cheek.

The inflamed eye is to be washed out (with a syringe) with a weak solution of permanganate of potash—Condy's lotion—every hour.

Weak atropine drops are to be instilled every three or four hours. If the cornea be quite free from ulceration, the inside of the lids may be painted once daily with strong nitrate of silver drops, or weak nitrate of silver drops may be applied two or three times a day.

Should ulceration of the cornea be found to exist, use no nitrate of silver.

At night apply atropine ointment inside the margin of the lower lid, and bandage on a pad of lint soaked in weak chloride of zinc drops. (Boracic acid lotion is better if the cornea be ulcerated.)

In any case the lotions used should be iced, and an ice compress is to be applied over the pad of lint. The eye should be dressed once or twice during the night.

The patient is to be kept in a dark room.

Attention should be paid to the general health.

Ophthalmia Neonatorum (Infantile Ophthalmia).—This affection is purulent ophthalmia occurring in a newly-born infant; and the treatment is precisely similar. As a prophylactic, the vagina of the mother may be well washed out during labour with a solution of perchloride of mercury—1 in 5,000,

and the infant's eyes kept well syringed with boracic acid lotion three times a day, commencing immediately after birth, and keeping up the treatment for a week. About 30 per cent. of the blindness which occurs in young people results from neglect of these simple precautions.

Phlyctenular Ophthalmia (Phlyctenule).

—A phlyctenule is a small vesicular elevation (herpes) which occurs on the ocular conjunctiva, frequently near the margin of the cornea. Colourless at first, the pimple soon becomes yellowish (pustular). Blood-vessels are now seen radiating from it, usually in the form of a triangular patch, with the apex nearest to the cornea. There may be several phlyctenules present at one and the same time, and some of these may be situated on the cornea itself (*vide* CORNEA).

Treatment.—If *any* of the phlyctenules are situated on the cornea, the case is to be treated as one of Phlyctenular Keratitis (*vide* CORNEA). When limited to the conjunctiva, the affection yields most readily to mild astringent treatment. Boracic acid lotion is to be used three or four times a day; and after each application of the lotion a few of the weak chloride

of zinc drops, or sulphate of copper drops, should be instilled. Boracic acid ointment is to be applied inside margin of lower lid at night. If there be much general conjunctivitis and irritation, cocaine drops may be advantageously employed. Insufflation with calomel powder may be tried if the cornea be not implicated.

Granular Ophthalmia (Granular Lids. Trachoma).—A number of small elevations, resembling in appearance a mass of boiled sago grains, are found on inner surface of lid (more often the upper). Conjunctivitis is present. The irritation caused by the friction of the elevations, and their contact with the cornea, produce on the corresponding portion of that structure a vivid patch of vascular injection, resembling "raw flesh" (Pannus). Whenever pannus exists granulations will be found on everting the lid.

Treatment.—The course of the disease is very chronic and obstinate, and treatment must be unremitting, to result in cure. The lids are to be everted daily and the granulations touched lightly with a crystal of sulphate of copper. Boracic acid lotion may be employed every few hours to wash out discharge.

Painting the granulations every two or three days with strong nitrate of silver drops is often highly beneficial. Cocaine drops may be used to assuage irritation. If the cornea be inflamed or ulcerated, and photophobia troublesome, one or two weak atropine drops should be instilled night and morning. Glycerine of tannic acid enjoys the reputation of being one of the best local applications, and it may certainly be tried without fear of evil consequences resulting, but the surgeon should not place too much confidence in its efficacy, or he will probably be much disappointed. Boracic acid ointment should be applied inside the margin of the lower lid at night.

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CORNEA.

Vascular Keratitis (Superficial Inflammation of Cornea).—The more superficial layers of the cornea are often the seat of inflammatory action, as evidenced by the deposition of leucocytes, producing patches of opacity, and by the development of blood-vessels running over the margin of the cornea, towards its centre. The cause of the inflammation may be the direct spread of the inflammatory process from contiguous structures; or it may be concomitant with ulceration; it may be set up by the irritation of in-growing eyelashes, or by granular lids; it may arise from the presence of a phlyctenule, or be due to the mechanical effect of a foreign body, either imbedded in the cornea itself or lodged under a lid. Exposure to cold and damp is also said to produce keratitis. The vascular patch known as pannus, which is attributable to granular lids, has already been mentioned.

Treatment.—In all cases of acute inflammation of the cornea there is photophobia, and atropine drops should therefore be instilled.

When conjunctivitis is co-existent with keratitis, boracic acid lotion may be used every three or four hours. Atropine ointment should be applied inside the lower lid at bedtime; alterative medicine, *e.g.*, calomel and rhubarb, administered in the early stages; and tonics prescribed in the later ones. A large paper shade must be worn over both eyes. The disease is generally confined to one eye, but the sound eye must not be used for any fine work.

Phlyctenular Keratitis (Phlyctenules on the Cornea).—When a phlyctenule makes its appearance on the cornea, there is always some vascular keratitis. The little pimple seldom disappears without first becoming pustular, and then it soon bursts, leaving a small ulcer of the cornea.

Treatment.—As for Ulceration of Cornea.

Interstitial Keratitis (Deep Inflammation of Cornea).—In this type of inflammation—which is much more chronic than vascular keratitis—the deeper layers of the cornea are implicated. Both eyes are usually affected, though not necessarily at the same time. There is less tendency to the production of

blood-vessels and ulceration, and the characteristic appearance is simply one of cloudiness and general opacity, as if the cornea were made of ground glass. The whole area of the cornea is often involved, while in vascular keratitis the opacity is more patchy. There is great dimness of vision, the sight being often reduced to mere perception of light. The iris and pupil are frequently invisible through the opaque cornea. There is less photophobia than in vascular keratitis. The disease is almost invariably due to syphilis—generally inherited; though it occasionally occurs in persons apparently quite free from this taint.

Treatment.—Mercury and iodide of potassium, in some form, should be taken internally for a long time. If mercury cannot be borne by the mouth, inunction is to be practised. The ordinary *Unguentum Hydrargyri*, well rubbed into the armpits and inner surfaces of the thighs, answers admirably. The administration of cod-liver oil and tonics must not be neglected in strumous or anæmic subjects. Weak atropine drops must be instilled three times a day, and atropine ointment applied inside edges of lower lids at night. A large paper shade or dark blue “goggles” must be worn.

Ulceration of Cornea.—Ulcers of various kinds are very commonly met with in the cornea. They are sometimes large and easily seen ; but quite as often they are very small : occasionally so minute as to altogether baffle detection with the naked eye. But they can always be found by using two magnifying glasses, one to concentrate the light from a candle, or lamp, on to the eye, the other to look through in search of the breach of continuity on the surface of the cornea.

There is always photophobia when ulceration exists—and it is often intense, the eye watering very freely as soon as the lids are parted. A variable amount of injection of the blood-vessels round the cornea will also, probably, be noticed. If the ulcer have resulted from the breaking down of a corneal phlyctenule—and also in some other instances—there will most likely be found a leash of blood-vessels running between the ulcer and the margin of the cornea. Ulceration may be so severe as to seriously inflame the cornea, and even lead to the formation of pus. This pus may find its way between the layers of the cornea, producing a peculiar effect known as onyx ; or the ulcer may perforate the cornea, and pus may be discharged into the anterior

chamber, at the lower portion of which it will collect and form what is called hypopyon. Hypopyon may, however, exist without actual perforation of the cornea. If ulceration have been severe enough to destroy more than the outer layer of the cornea, a milky-white cicatrix will be produced on healing. Such a cicatrix is called a macula, when limited to one small spot ; a nebula, when only sufficiently marked to produce mere cloudiness ; and a leucoma, when quite opaque. It is obvious that, should a cicatrix be situated at the centre of the cornea, vision will be greatly impaired.

Treatment.—The sheet-anchor of treatment in all cases of corneal ulceration is atropine. Weak atropine drops should be instilled every two or three hours ; and, if pain be severe, cocaine drops may be used simultaneously. Atropine ointment is to be applied inside margin of lower lid at night ; on no account is any preparation containing a salt of lead to be used, as a permanent white opaque deposit of albuminate of lead is produced if there be the smallest abrasion or ulceration of the cornea. It is safer never to use lead at all in the treatment of eye affections.

Severe pain may be greatly relieved by local

blood-letting, either by means of a leech to the temple, or by wet cupping.

Hot belladonna fomentation constantly applied to the closed eye affords great comfort in many acute cases.

The general health must be carefully attended to, and change of air is advisable during convalescence.

A large shade over both eyes is essential.

In very chronic cases of ulceration, with but little conjunctival injection, a blister on the temple may be applied, or the brow may be painted every second day with tinctura iodi. A silk seton, an inch from the outer canthus, and kept *in situ* (but moved daily) for a month, is sometimes invaluable.

Foreign Bodies in Cornea.—Particles of dust, bits of cinder, chips of metal, and in fact foreign bodies of all sorts, are apt to come in violent contact with the cornea, and some occasionally imbed themselves firmly in this structure. The irritation produced is great—even if the offending body be so small as to be imperceptible without a lens. Whenever irritation is suddenly set up the eye should be scrupulously searched for foreign bodies through a magnifying glass, and by a strong

light. If a piece of grit be allowed to remain, even a few hours, stuck in the cornea, keratitis will be produced. Before attempting removal, and indeed before examination, if pain be severe, the eye is to be rendered quite insensitve by the frequent instillation, say at intervals of four or five minutes, of one or two cocaine drops. When complete local anæsthesia has been induced, no difficulty, as a rule, will be experienced in getting rid of the particle. If too deeply imbedded for removal with a blunt instrument it is to be delicately "picked out" with the point of a needle or hare-lip pin, set in a handle. If the cornea have been much damaged or inflamed, and photophobia be considerable, a few drops of atropine in castor-oil should be applied immediately after the manipulation, and a large shade worn over both eyes for a day or two. Complete perforation of the cornea by a foreign body is a much more serious matter, especially if the grit have dropped into the anterior chamber or wounded the iris or lens. An operation will then be necessary.

Wounds of the Cornea and its immediate Vicinity.—It sometimes happens that a sharp instrument is accidentally brought in

contact with the eye, and the cornea may be cut or scratched. If the cornea *alone* be wounded, and no dirt have been forced into the eye (*see* Foreign Bodies in Cornea), the divided parts will probably unite readily. But if the wound extend to (or be entirely in) the ciliary region, just outside the margin of the cornea, the greatest danger may be apprehended, especially in the case of punctured wounds; such injuries generally produce violent inflammation of the structures forming the "dangerous zone", and frequently result in destruction of the injured eye, with sympathetic ophthalmitis in its fellow.

Treatment.—In all cases of injury iced applications are called for. Boracic acid lotion on a pad, with an ice compress outside, should be applied at once. Both eyes are to be securely bandaged, and the patient put to bed. Two or three leeches may advantageously be placed on the temple, if there be much pain. No atropine should be used till the wound has begun to heal—twenty-four to thirty-six hours after receipt of the injury. If the wound be very extensive, or of a jagged nature, and pain intense, it is perhaps better to excise the eyeball at once. When the cornea is only superficially wounded, a drop of atropine in castor-

oil applied directly, and a shade over both eyes, will often suffice to effect a cure.

In all cases of injury the sound eye is to be closely watched, and the first symptom of pain in it, especially if accompanied by "watering", should be taken as a hint that sympathetic trouble is commencing. A consultation is now advisable. Whenever the cornea is completely penetrated, whether by a wound or a deep ulcer, the aqueous humour escapes, and the cornea, losing its support, becomes flaccid and falls in contact with the iris. These two structures may thus become adherent to each other (anterior synechia), especially if the iris be at all inflamed at the time. Or a portion of iris may protrude through, and become entangled in, the wound of cornea (hernia of iris). If seen in time, an attempt may be made to release the imprisoned iris with a blunt probe. When firmly fixed, however, it is better to leave the hernia alone, unless causing evident mischief, when operation will be necessary.

BURROUGHS

WELLS & CO.

SCLEROTIC.

Sclerotitis (Inflammation of Sclerotic).—

There is a pink zone of congestion round the cornea, *under* the conjunctiva, which can be moved with the tip of the finger over the injected straight vessels. The conjunctiva may itself be inflamed also, but will still be movable over the pink zone. The eye is tender on pressure through the lid. If the inflammation be severe the pink colour will probably give place to a purplish tint. The affection is not infrequently concomitant with rheumatic iritis.

Treatment.—Soothing applications are of most service. Astringents only increase the irritation. Weak atropine drops are to be used two or three times a day. Leeches may be applied to the temple if pain be severe. A shade over both eyes, or blue spectacles, should be worn.

If there be conjunctivitis, warm boracic acid lotion is to be used, in addition to the atropine.

Episcleritis.—Is characterized by a circumscribed patch of congestion of pink colour, near the margin of the cornea. It is, in fact, scleratitis occurring over a limited area. This variety of inflammation is sometimes met with in syphilitic subjects. There is very little tendency to conjunctivitis.

Treatment.—As for Scleritis. In syphilitic persons mercury internally is necessary.

Wounds of Sclerotic.—(*See* Wounds of Cornea and its immediate Vicinity.)

IRIS.

The iris is subject to various kinds of inflammation, in all of which (except the serous) there is a considerable tendency to exudation of plastic material, which is apt to glue the posterior surface of the iris, especially at the pupillary margin, to the capsule of the lens. The points of attachment so formed are called posterior synechiæ. (For anterior synechia *see* Wounds of Cornea.)

The following are the varieties of iritis usually recognized :—

Simple Iritis.—Simple inflammation of the iris may be set up by exposure to damp or cold, especially in a person who is in a low state of health. Sometimes it is difficult to find any apparent cause for the attack, which may be very slight, or just the reverse, so much so that in the worst forms suppuration of the iris may supervene, in which case the surrounding tissues will probably be involved in the trouble.

The iris is discoloured, becoming yellower

than normal, so that a blue iris will appear greenish ; a brown one orange, etc. The discoloration is noticed *chiefly* round the margin of the pupil.

The free edge of the iris is thickened (swollen) and for this reason loses it freedom of movement ; so that the pupil is sluggish, and responds badly to alteration of light. The thickening of the iris is not symmetrical and regular, some points being more swollen than others. Therefore the shape of the pupil is generally irregular, or oval, instead of circular. This is particularly noticeable when atropine is dropped into the eye.

The swelling also causes the edge of the iris to encroach upon the pupillary area more than usual, with the effect of rendering the pupil smaller than normal.

There is congestion of the vessels round the cornea.

The aqueous becomes more or less turbid by admixture with inflammatory *débris*.

Vision is therefore diminished.

There is watering of the eye.

Pain and photophobia may be entirely absent, or very acute.

Posterior synechiæ may be formed, and if so, the points of adhesion will be clearly seen

when the eye is under the influence of atropine; dilatation of the pupil taking place *between* the fixed points, a sort of engrailed appearance is produced.

Treatment.—In mild cases, weak atropine drops to be instilled three times a day. In severe cases, strong atropine drops every two or three hours, especially if there be any posterior synechiae. Atropine ointment inside lower lid at night. Hot belladonna fomentations at short intervals during the day, alternated with dry heat, applied by means of a handful of cotton-wool, made hot at the fire, and held to the closed eye.

If pain be severe one or two leeches to the temple.

A sharp saline aperient is to be administered at the onset of the attack; and tonics, such as quinine with the mineral acids, are to be given during the whole course of the disease. Both eyes are to be bandaged if great pain be complained of, the affected eye being covered with a pad soaked in hot belladonna fomentation. The bandage only to be removed while the eye is being fomented or subjected to the influence of dry heat, for ten minutes at a time. The room should be darkened. If there be no pain, a large shade over both eyes will suffice.

Rheumatic Iritis occurs mostly in persons who suffer from chronic rheumatism. In addition to the symptoms of simple iritis there may be lymph visible on the surface of the iris. There is also a greater tendency to relapse and recurrence. Pain is often acute.

Treatment.—As for simple iritis, except that the internal remedies should be aimed at the rheumatism.

Iodide of potassium, bicarbonate of potassium, and saline aperients, are therefore indicated.

Syphilitic Iritis appears in the late secondary or early tertiary stages of the general disease, and is therefore more often found in persons who have acquired, than in those who have inherited, syphilis. The local symptoms resemble those of simple iritis, except that there is a greater amount of plastic material exuded, and therefore a greater likelihood of adhesions being formed between the iris and the capsule of the lens. Small gummata may be deposited in the substance of the iris and produce little elevations on its surface. These may eventually absorb, or suppurate and burst, and the pus will then accumulate at the bottom of the anterior chamber

(hypopyon). Nodules of lymph are frequently seen on the anterior surface of the iris. Pain is generally less severe than in the rheumatic form.

Treatment.—As for simple iritis, except that the internal remedies should be aimed at the syphilis. Mercury, in some form, must be administered steadily until the gums get tender. Tonics may then be substituted, with or without iodide of potassium; and inunction of armpits and inner surfaces of the thighs with mercurial ointment practised night and morning.

Traumatic Iritis may result from a wound or from a blow on the eye. Atropine is necessary, but should not be employed until the wound in the cornea, if one exist, has begun to heal (twenty-four to thirty-six hours after receipt of injury; *see* Wound of Cornea). Iced boracic acid lotion, or plain iced water, should be constantly applied. No warm or hot application of any sort is admissible. Leeches to the temple will relieve pain. During convalescence a shade over both eyes, or blue “goggles”, are advisable.

Serous Iritis.—In serous iritis there is little or no tendency to the exudation of lymph or

to the formation of adhesions. The aqueous humour is turbid, and an ophthalmoscopic examination would probably reveal some disease in the vitreous. The iris is less brilliant in colour, but not so yellow as in the other types of iritis.

There is generally inflammation of neighbouring structures, with great tenderness of the eyeball on pressure through the lid, and a bluish zone of colour round the cornea (in ciliary region). The posterior layer of the cornea almost invariably shares in the inflammatory action, which not infrequently also attacks the ligamentum pectinatum iridis (see Glaucoma), and the tension of the globe may be increased. On the posterior surface of the cornea may often be seen a group of minute inflammatory deposits, like dots. They generally occupy a triangular area in the upper segment of the cornea (Keratitis Punctata). A magnifying glass and a strong light will reveal these specks if they exist.

The pupil is less contracted than in the other varieties of iritis, and is even dilated in some cases.

Treatment.—No hard and fast rule can be laid down as to the use of atropine. Great hesitation should be shown in dilating the

pupil if the tension of the globe be over-normal (*see* Glaucoma). Indeed, if tension be high, eserine drops offer a better chance of successful treatment ; but there is no doubt that in such cases tapping the anterior chamber and allowing the aqueous to escape affords the greatest relief. Short of performing this operation, hot poppy fomentations, alternated with the application of dry heat—as for simple iritis—are most comforting. In cases of long standing, blisters to the temple, or setons, may be tried. As the disease is often associated with a gouty condition, iodide of potassium and quinine may be used internally.

LENS.

Cataract means loss of transparency, partial or total, of the crystalline lens. If the opacity be sufficient to interfere with sight the defect will be detected by the tests already given (*see* Vision).

Cataracts vary in type according to the method of their production. Some are confined to the periphery of the lens ; others chiefly to the more central parts ; some again are produced as a result of injury ; while some are congenital. All cataracts which occur in persons under thirty years of age are "soft" ; while those which are present in older persons are more or less "hard". When the whole of the lens is opaque the cataract is said to be mature, and is then ripe for removal by operation. Under these circumstances it may be diagnosed without the use of the ophthalmoscope (which is necessary for the detection of *commencing* cataracts) by the milky whiteness of the lens seen through the pupil, and the total loss of vision.

Cataracts the result of injury (traumatic

cataracts) occasionally disappear spontaneously, by the solvent action of the aqueous humour. This depends, however, to a great extent on whether the capsule of the lens has been ruptured sufficiently to allow the aqueous to act on the lens matter.

VITREOUS HUMOUR.

The vitreous humour is occasionally the seat of grave mischief, but inasmuch as in these cases the sight is materially obscured, the tests already given (*see* Vision) will reveal the presence of some affection requiring a consultation.

We must only mention, therefore, that common condition which gives rise to the appearance of black or grey specks floating before the eyes, known as *MUSCÆ VOLITANTES*.

The size, form, and number of these specks vary very greatly. Some are mere dots; others are like threads, commas, cobwebs, etc. Suffice it to say that, though often a source of great anxiety to the patient, these *muscæ volitantes* are of no real importance and are not indicative of disease, nor do they affect the sight.

Opaque particles in the vitreous *which interfere with vision* are symptomatic of organic changes of a serious character.

INTRAOCULAR DRAINAGE.

Glaucoma.—The fluids of the eyeball are mainly derived from the ciliary processes. Some of the fluid thus given off passes directly into the vitreous, and some directly into the aqueous chamber.

The portion which goes into the vitreous eventually finds its way into the aqueous through the pores of the suspensory ligament of the lens. Thence it escapes through apertures in the ligamentum pectinatum iridis into the canal of Schlemm, and onwards into the circulation—either by direct entrance through the walls of the veins in the vicinity, or by the intermediate way of Tenon's capsule.

It is evident that if any obstruction to the free exit of the fluid exist, the globe will become over-distended, and the "ocular tension" will be proportionately raised.

This condition is called *Glaucoma*.

The obstruction probably takes place in the apertures, both of the suspensory ligament and of the ligamentum pectinatum. This may be brought about by swelling of the

ciliary processes, enlargement of the lens in advanced life, etc., or by any morbid condition which causes a block in the drainage.

Glaucoma may be acute (when the onset is generally extremely sudden) ; sub-acute ; or chronic ; primary ; or secondary.

Suffice it for our purpose that, whatever be the type of glaucoma, any dilatation of the pupil increases the intensity of the symptoms, by thickening the iris at its outer periphery—the region in which the block has already taken place. The additional pressure thus produced increases the difficulty of escape of fluid, and it is therefore of the highest importance that glaucoma should be accurately diagnosed, and that all drugs which dilate the pupil should be most carefully avoided.

In all varieties of glaucoma, therefore, a most important point of diagnosis is the *tension*.

This is estimated by placing the tip of the forefinger of each hand on the closed upper lid as far backwards under the ridge of the orbit as possible. The patient is directed to look downwards, and while keeping one finger steadily applied to the lid, *vertical* pressure downwards is gently made with the other—as if feeling for fluctuation in an abscess. The

hardness (tension) of the eyeball may thus be very accurately determined by a practised hand. It is well to compare the tension of an eye suspected of glaucoma with that of an eye known to be sound, as, for instance, the observer's own eye. If a distinct increase of tension be noticed, the case is one either of glaucoma or of serous iritis (which see).

The pupil, in glaucoma, is usually *dilated*, and is sluggish to light—*never* contracted. The pupillary area, especially in chronic forms, is greenish rather than black. Vision is always impaired (*see* Vision), and in neglected cases rapidly lost. The anterior chamber appears shallow, the iris being pushed forward by the lens, which is itself pressed upon from behind by the increased amount of fluid in the vitreous chamber. The aqueous humour is not turbid.

The patient often notices a halo of colours resembling those of a rainbow, when looking at a light. This is a very characteristic symptom (but may be simulated by mucous discharge, or a greasy application, in the eye).

Internal changes take place which are readily recognizable with the ophthalmoscope—pulsation of retinal veins, cupping of optic disc, etc. Hæmorrhage occasionally takes

place into the vitreous and obscures the fundus.

Finally, *pain* is a fairly constant symptom, varying in severity from an insignificant "aching" of the eyeball to the most excruciating agony. As a general rule the pain is proportionate to the acuteness of the attack, but this is by no means always the case.

Treatment.—Operation must be resorted to without a day's delay, or sight may be completely lost. If the operation be performed *at once*, even though the vision may have been reduced to almost *nil*, it is possible that some may be regained.

Meanwhile, in all cases of *marked* increase of tension, whatever the cause, apply eserine drops (weak or strong, according to their effect) every two hours until the pupil be contracted to the smallest possible size. Then at longer intervals, and of such strength as to just keep the pupil at its smallest.

Leeches to the temple if pain be sharp.

Hot poppy fomentation may also be used to soothe the aching eye, and if rest cannot be procured otherwise, a hypodermic injection of morphia may be administered.

BURNS ; SCALDS ; LIME AND ACIDS IN THE EYE.

Burns and Scalds are likely to produce violent inflammation of all the parts injured. The free use of cocaine drops, atropine dissolved in castor oil, and gentle syringing with iced boracic acid lotion—with an ice compress between whiles—are the chief indications of treatment. A hypodermic injection of morphia may be required if pain be severe.

Lime in the Eye produces an escharotic action on the parts touched. The conjunctival sac should be well syringed out with vinegar and water, one part of the former to ten parts of the latter. Cocaine drops must be used frequently to allay pain. Atropine in castor oil applied three or four times a day ; and an ice compress may be used if inflammation be serious.

Acids in the Eye.—Syringe the conjunctival sac with bicarbonate of sodium lotion instead of vinegar and water. The rest of the treatment as for Lime in the Eye.

From any of the above injuries great destruction of tissue may result; and it not infrequently happens that even if the eye be saved, ulceration and ultimate granulation of opposing surfaces of conjunctiva, or of conjunctiva and cornea, will occur. The greatest difficulty is then experienced in preventing the lids from becoming attached to the eyeball, or to each other. A transplantation operation is often necessary, and very indifferent results are obtained as a rule. Carefully avoid using any preparation of lead.

FORMULÆ.

DROPS.

WEAK ATROPINE DROPS.

Sulphate of Atropine, gr. j.
Distilled Water, $\bar{3}$ j.

Dissolve.

STRONG ATROPINE DROPS.

Sulphate of Atropine, gr. iv.
Distilled Water, $\bar{3}$ j.

Dissolve.

SOLUTION OF ATROPINE IN CASTOR OIL.

Sulphate of Atropine, gr. iv.
Castor Oil, $\bar{3}$ j.

Dissolve by the aid of gentle heat.

COCAINE DROPS.

Hydrochlorate of Cocaine, gr. xxiv.
Distilled Water, $\bar{3}$ j.

Dissolve.

WEAK ESERINE DROPS.

Salicylate of Eserine, gr. j.
Distilled Water, $\bar{3}$ j.

Dissolve.

STRONG ESERINE DROPS.

Salicylate of Eserine, gr. iv.
Distilled Water, $\bar{3}$ j.

Dissolve.

WEAK CHLORIDE OF ZINC DROPS.

Chloride of Zinc, gr. j.
Distilled Water, $\bar{3}$ j.

Dissolve.

STRONG CHLORIDE OF ZINC DROPS.

Chloride of Zinc, gr. iv.
Distilled Water, $\bar{3}$ j.

Dissolve.

WEAK NITRATE OF SILVER DROPS.

Nitrate of Silver, gr. j.
Distilled Water, $\bar{3}$ j.

Dissolve.

STRONG NITRATE OF SILVER DROPS.

Nitrate of Silver, gr. xx.
Distilled Water, $\bar{3}$ j.

Dissolve.

SULPHATE OF COPPER DROPS.

Sulphate of Copper, gr. ij.
Distilled Water, $\bar{3}$ j.

Dissolve.

LOTIONS.

BORACIC ACID LOTION.

Boracic Acid, gr. x.
Distilled Water, $\bar{3}$ j.

Dissolve.

CONDY'S LOTION.

Permanganate of Potash, gr. $\frac{1}{2}$.
Distilled Water, $\bar{3}$ j.

Dissolve.

WELLCOME & CO.

ARX

BICARBONATE OF SODIUM LOTION.

Bicarbonate of Sodium, gr. xx.

Distilled Water, $\bar{5}$ j.

Dissolve.

FOMENTATIONS.

BELLADONNA FOMENTATION.

Extract of Belladonna, $\bar{5}$ j.Distilled Water (hot), $\bar{5}$ xx.

Mix.

POPPY FOMENTATION.

Poppy Heads (broken small), 2.

Distilled Water, $\bar{5}$ xx.Boil for twenty minutes, strain, and add sufficient boiling water to make up to $\bar{5}$ xx.

OINTMENTS.

ATROPINE OINTMENT.

Sulphate of Atropine, gr. iv.

Lanolin, $\bar{5}$ ijss.Sweet oil of Almonds, $\bar{5}$ jss.

Mix.

WEAK YELLOW OINTMENT.

Yellow Oxide of Mercury (in fine powder),
gr. j.Lanolin, $\bar{5}$ ijss.Sweet Oil of Almonds, $\bar{5}$ jss.

Mix.

STRONG YELLOW OINTMENT.

Yellow Oxide of Mercury (in fine powder),
gr. iv.
Lanolin, ʒ ijss.
Sweet Oil of Almonds, ʒ jss.

Mix.

YELLOW OINTMENT WITH ATROPINE.

Yellow Oxide of Mercury (in fine powder),
gr. j.
Sulphate of Atropine, gr. ij.
Lanolin, ʒ ijss.
Sweet Oil of Almonds, ʒ jss.

Mix.

BORACIC ACID OINTMENT.

Boracic Acid (in fine powder), gr. xv.
Lanolin, ʒ j.
Sweet Oil of Almonds, ʒss.

Mix.

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AXIOMS.

(1) Always test the vision carefully if there be the least suspicion that it is defective.

(2) Never delay treatment a single hour unnecessarily, after the diagnosis has been made.

(3) The discharge from an eye suffering from the simplest form of conjunctivitis may produce purulent ophthalmia in another eye inoculated with it. Enforce the strictest cleanliness and care.

(4) Be sure that no glaucoma exist, before employing atropine. Errors of diagnosis between iritis and glaucoma are not unknown.

(5) Always examine the cornea with a magnifying glass whenever there is a possibility of its being the seat of an ulcer or foreign body.

(6) Before treating conjunctivitis be sure that no foreign body is lodged under a lid.

(7) Whenever lotions are prescribed they should be applied with a syringe or eye-cup. In no other way can the whole surface of the conjunctiva be reached.

(8) Avoid preparations containing any salt of lead.

(9) Never order a shade to be worn over one eye only. If one eye needs protection from light so does the other.

(10) Bandages should only be used when it is necessary to keep a pad applied to the eye. Merely to keep out light a paper shade is much better, and not so hot.

(11) Remember that persistent frontal headache, and also squint, are very often due to an uncorrected error of refraction. Opticians cannot safely be entrusted with the estimation of such errors.

(12) It is better not to undertake the treatment of an eye case at all unless the most careful and complete attention can be given to it.



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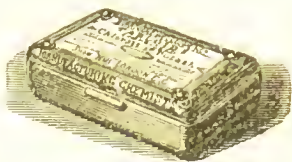
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Caffein Sodio Salicylate	1-2 gr.	Morphine Bi-Meconate	1-8, 1-6, 1-4 & 1-3 gr.
Cocaine	1-6, 1-4, 1-2 gr.	Morphine Sulphate	1-12, 1-8, 1-6, 1-4, 1-3 & 1-2 gr.
Cochicin	1-100 gr.	Morphine & Atropine combinations	
Codein Phosphate ..	1-4 gr.	Pilocarpin	1-10, 1-3 & 1-2 gr.
Cornutin	1-60 gr.	Quinine Hydrobromate	1-2 gr.
Curare	1-12 gr.	Sclerotic Acid ..	1-2 & 1 gr.
Digitalin	1-100 gr.	Sparteïn Sulphate ..	1-2 gr.
Ergotinin	1-150 & 1-300 gr.	Strophanthin ..	1-500 gr.
Eserin Salicylate (unirritating)	1-100 gr.	Strychnine	1-150, 1-100 & 1-60 gr.
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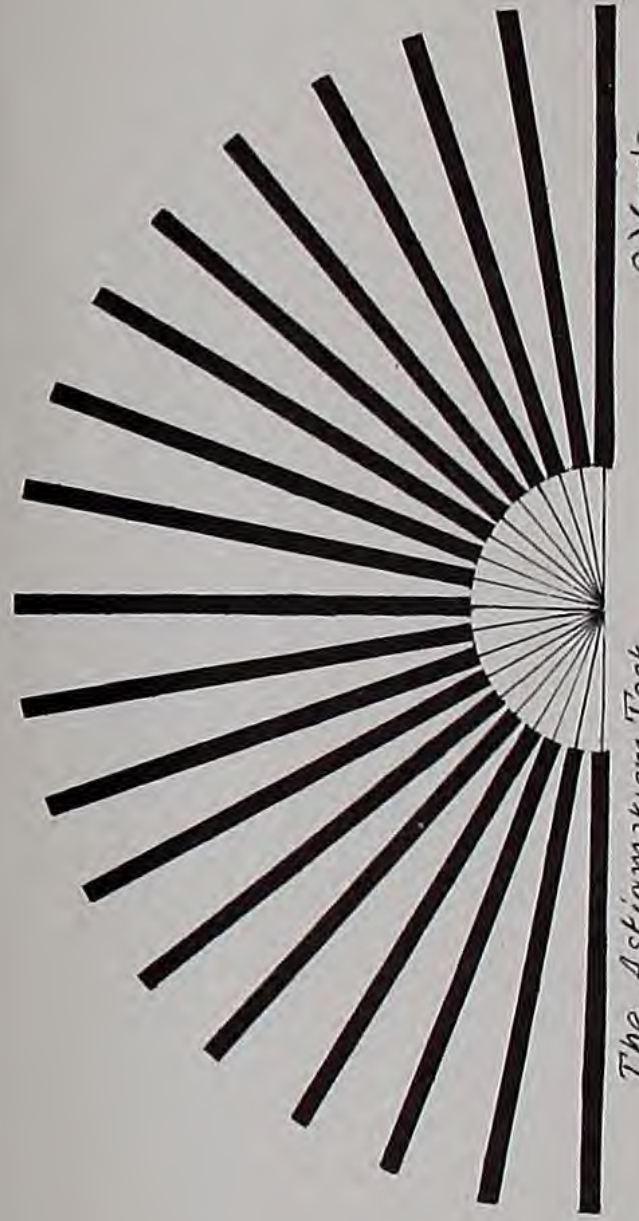
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